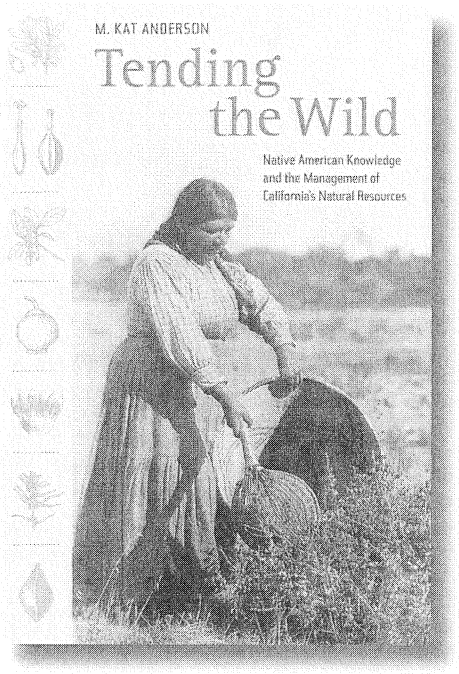
Tending the Wild

Native American Knowledge and the Management of California's Natural Resources

By M. Kat Anderson



A multi-review treatment by

Lawrence F. Van Horn

Nancy K. Turner

David E. Ruppert

Counterpoint by M. Kat Anderson

Tending the Wild: Native American Knowledge and the Management of California's Natural Resources[1]

By M. Kat Anderson[2]

Introduction by Lawrence F. Van Horn[3]

We are delighted to present two reviews of *Tending the Wild* as part of the multi-review approach to books reviewed in *The Applied Anthropologist*. *Tending the Wild* by M. Kat Anderson is quite a tour de force in its comprehensive coverage of the ethno-botany of the indigenous peoples of what is now the state of California. This book represents aspects of what were historic practices, what still is practiced, and what might yet be revived. Is it applied anthropology? From an anthropological point of view, I believe it is because it shows how indigenous knowledge has been adaptive and still can be adaptive despite and/or because of "cultural change in the modern world." The latter phrase is from the mission statement of *The Applied Anthropologist* and relates to our journal's focus. *Tending the Wild* fits this focus because it thoroughly documents human solutions to a wide range of subsistence problems of the American Indians residing in California.

Anderson speaks of a "tension between nature and culture" (p. 358). She suggests that the key to "allow both humans and nature to flourish....lies in achieving a creative, even tension between nature and culture, a tension that our human antecedents in California understood well" (p. 358). I suggest that this book should be read and used in that light. You, the reader, please judge, but first be guided by the two reviews that follow. One is by a leading expert in Kat Anderson's field of ethno-botany, Nancy Turner. The other is by an anthropologist who truly appreciates the nuances and functions of ethno-botany as applied anthropology, David Ruppert. Please read on and enjoy how useful Kat Anderson's *Tending the Wild* may prove to be.

Notes

1. Berkeley: University of California Press, 2005. 557 pages, three parts, 12 chapters, bibliography, coda, drawings, index, introduction, maps, notes, photographs, preface including acknowledgments, tables. Cloth $39.95 U.S.

2. M. Kat Anderson's Ph.D. is from the University of California at Berkeley in wildland resource science. She is employed by the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture as its national ethno-ecologist who reconstructs the plant uses, land-management practices, and harvesting strategies of indigenous peoples in the United States with an emphasis on California. Also at the University of California at Davis, she is an ecologist at its Agricultural Experiment Station, and a lecturer in the Department of Plant Sciences. She may be reached at the Department of Plant Sciences, University of California at Davis, Mail Stop 6, 1 Shields Avenue, Davis, California (CA) 95616-5270 USA. She may also be reached at 530-752-8439 by telephone and at **mkanderson@ucdavis.edu** by e-mail.

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Tending the Wild: Native American Knowledge and the Management of California's Natural Resources[1]

By M. Kat Anderson[2]

Reviewed by Nancy J. Turner[3]

Tending the Wild represents a significant step forward in our understanding and recognition of indigenous-knowledge systems relating to traditional land and resource management. The book is painstakingly compiled, highlighting Kat Anderson's collaborative work with indigenous elders, harvesters, and traditional-knowledge practitioners. It encompasses her own original research, including observations and experimentation with plants and habitats, and is furthered strengthened by her careful review and incorporation of an immense body of literature and sometimes very obscure literature. Its scope and breadth are unparalleled as an ethno-ecological treatment of a particular area of North America, namely California. In assessing a book like this, I often turn immediately to the end. This book has a total of 44 pages of notes (pages 365-409) and 59 pages of bibliography (pages 411-470). My initial attempts to count the references ended with 157 for only the A's and B's, up to R.A. Bye). There are 55 pages of index (pages 471-526). All such pages are evidence of meticulous documentation.

This book is divided into three parts. The first is an introduction to California, its peoples, its environments, and its history of European contact and colonization. The second part documents in detail indigenous practices of land and resource management found in California. Numerous examples are given of the ingenious ways in which the First Peoples cared for, maintained, and enhanced their food sources, materials for basketry, and other natural resources on which they have depended for thousands of years. The third part addresses resource harvesting and management by contemporary Native Americans. It provides examples and directions for restoring practices that have diminished with the loss of habitats, loss of access to resources, and the accompanying loss of cultural knowledge.

This book is a superb culmination of Kat Anderson's work to date, and a fitting major step in her research path and career as an ethno-ecologist. Her M.A. thesis in the late 1980s, on plant-resource use and management of the Yosemite Valley region, set her firmly on her trajectory (Anderson 1988). As well as studying general land use and management practices, she interviewed and worked with Native Californian basketweavers, notably those of the Southern Sierra Miwok, to learn about the use and management of western redbud (*Cercis occidentalis*; Fabaceae). She then tested the actual effects of these practices through experimental burning and coppicing. She demonstrated unequivocally that indigenous management practices optimized the growth and quality of this important basketry material (Anderson 1991, 1993a). She broadened her research to include indigenous management of deergrass (*Muhlenbergia rigens*; Poaceae), another important basketry material of certain indigenous basketweavers of California, particularly in relation to the use of fire to renew the plants (Anderson 1996a). She also began to work on selective harvesting and cultivation of geophytes, so-called "wild" root vegetables such as blue dicks (*Dichelostemma capitatum*; Liliaceae) (see Anderson 1993a, 1993b, 1997). *Tending the Wilderness* incorporates several of Anderson's previous publications. It was preceded by an anthology Kat Anderson co-edited with Thomas Blackburn (Blackburn and Anderson 1993), a book that foretells and whets the appetite for this current work of hers.

Always, Anderson's work has been integrative and has given us new perspectives and examples to consider in relation to practices of horticulture and cultivation as management tools for peoples who were previously simply categorized as hunter and gatherers. She has been right at the forefront of those practicing a whole new paradigm to analyze traditional plant and animal resource management, including the understanding of prescribed fire as an environmental management tool, and the incorporation of traditional indigenous management practices in environmental and applied ecological restoration

(Anderson 1996b, 1999).

Kat Anderson has been and is a leader in research on traditional land and resource management and its applications to contemporary natural resource management, conservation, and ecological restoration. At the same time, however, her work is a part of an entire movement within ethno-botany, ethno-ecology and related fields, with roots back into the early 1900s, and pioneered by individuals like Henry Lewis with his research on traditional landscape burning in California and Australia (originally published 1973, reprinted 1993). The movement gained momentum with the publication, *Resource Managers: North American and Australian Hunter-Gatherers*, edited by Nancy Williams and Eugene Hunn (1982). Richard Ford's essay on patterns of food production in North America in his edited volume on *Prehistoric Food Production in North America* (1985), Gary Nabhan's *Gathering the Desert* (1985), Florence Shipek's work with the Kumayaay of California (1989) and Eugene Hunn's research with James Selam and other Sahaptin peoples of the mid-Columbia region of Washington (Hunn 1990) are excellent earlier examples of this direction of research. Parallel recognition of the often subtle and little recognized management systems of indigenous peoples of tropical and subtropical regions was also occurring at this time, as exemplified by Darrell Posey's and Bill Balée's work in Amazonia (Posey 1985; Balée 1994). Australia, too, has been an area where traditional management practices of indigenous peoples have been studied and recognized (see Baker et al. 2001). In fact, from the 1980s through the 1990s, there has been an enormous body of research, global in scope, on indigenous and local peoples' methods of maintaining and perpetuating their resources, both in agricultural systems and in less heavily imprinted ecosystems from the tropics to the polar regions; the works of Freeman and Carbyn (1988) and Oldfield and Alcorn (1991) represent just two of many examples.

The close relationship between peoples' beliefs and worldviews and their use and management of resources was explored in detail by Eugene Anderson in his book *Ecologies of the Heart* (1996), and later highlighted by Fikret Berkes (1999) in *Sacred Ecology*. Leslie (Gottesfeld) Johnson has also written about this important topic (see Gottesfeld 1994). Edited volumes like Blackburn and Anderson (1993), and later, Boyd (1999), Nazarea (1999), Minnis and Elisens (2000), Ford and Martinez (2000), and Deur and Turner (2005) have highlighted the diverse and important work of numerous researchers in this area. Many of these authors, including Gary Nabhan (1985), Amadeo Rea (Nabhan and Rea 1987), and Catherine Fowler (1989), have both influenced and been influenced by Kat Anderson's work.

In addition to the various papers, books, and book chapters that have drawn from this rich body of research, a number of important recent dissertations have been produced that link to Anderson's work in various ways. For example, Sandra Peacock's integrative work on balsamroot (*Balsamorhiza sagittata*; Asteraceae) as a managed root vegetable of the Interior Plateau of British Columbia (1998) shows parallels with geophyte management practices documented by Anderson. Michelle Stevens collaborative research with California Native basketweavers on white root sedge (*Carex barbarae*: Cyperaceae) as a managed basketry material (1999) was supervised by Anderson. Douglas Deur's pioneering ethno-archaeological research on estuarine root gardens of the Northwest Coast (2000), and most recently, Brenda Beckwith's meticulous research (2004) on blue camas (*Camassia* spp.; Liliaceae) management on southern Vancouver Island, in collaboration with the Songhees Coasts Salish, are also strongly correlated to Anderson's research.

It is notable that Anderson has always worked collaboratively with Native Californians and has carefully acknowledged them as the original knowledge holders. This is critically important because scholars have often treated indigenous peoples only as research subjects. Or indigenous peoples have been completely ignored in their struggles to regain aspects of control of their lands and resources. They continue to need to gain respect, recognition, and positive benefits from their contributions. In this effort, the California Indian Basketweavers' Association (CIBA) has put Anderson's research to good use along with other Native American organizations. Anderson's work has helped to raise awareness of the impacts of pesticide use in forestry on the

health and wellbeing of indigenous users of food and basketry materials to support a more equitable and consultative approach to conservation and protected-area management by government agencies and non-governmental organizations (NGOs). Anderson has followed the important lead of Dennis Martinez, an indigenous ecologist and restorationist. She has followed his lead along with that of others in the Society for Ecological Restoration to help create a new approach to ecological restoration, eco-cultural restoration. This approach takes the cultures and traditional practices of indigenous peoples into account. Gregory Cajete, a noted environmental and cultural educator, is just one of many indigenous individuals to praise Kat Anderson for her important contributions toward a better understanding of Native American ecological practices.

The significance of Anderson's work is, perhaps, not so much that she documents distinctive approaches and practices of indigenous peoples to resource management in California, but rather that the practices and perspectives she identifies are widespread and probably even more ubiquitous than any of us have recognized. For example, we know that the entire range of the practices she writes about that have been applied by Californian First Nations in managing their plant resources. The practices include burning, pruning and coppicing, cleaning, selective harvesting, tilling, transplanting/replanting, and ceremonial management. They have been known to at least some of the First Nations of British Columbia and elsewhere on the Northwest Coast (Deur and Turner 2005), as well as in many other regions (Berkes 1999; Minnis and Elisens 2000). Similarly, the diverse modes of resource use and management described by Anderson have been applied over a whole spectrum of ecological zones, not only in California, but in many regions of the continent and beyond. Indigenous peoples did not confine themselves to only one place, but moved over their landscapes and territories in a patterned seasonal round, choreographed to the rhythm of the growing cycles and moderated by fluctuations of climate and resource productivity. Virtually every habitat, from coastal beaches to coniferous forests, to montane meadows, and every successional stage of vegetation, was known to and influenced by indigenous managers.

Sometimes, the effects of human hands and tools are subtle, sometimes unperceived by most of us, but increasingly, the profound influence of humans over thousands of years in molding their habitats to sustain their resources and meet their day- to-day needs, is accepted by scholars (see Denevan 1992). Anderson has thus documented not only peoples' techniques for perpetuating and enhancing the growth of individual species, but also has made a good case for entire domesticated landscapes including domestication at many scales. There may be some confusion in terminology with Anderson's particular use of "horticulture," "cultivation," and "domestication," which do not always match those used in other sources (see Deur and Turner 2005).

One of the saddest and most disturbing chapters of Anderson's book is Chapter 3, "The Collision of Worlds." Here, Anderson chronicles the immense disruption of the indigenous peoples' lifeways with the coming of various waves of outsiders. Examples abound, from the early Spanish explorers to the Franciscan missionaries, from those who came to wrest gold from the California hills to those who settled in its fertile valleys and drained wetlands, cut down trees, and grazed hordes of livestock. Anderson writes:

> Whether they were intent on Christianizing the Indians, extracting wealth from the land, extending territory, or making a livelihood, the Franciscan missionaries, Spanish soldiers, Mexican Californios, American miners, and American settlers who came to California wrought devastation both directly—through subjugation and genocide of indigenous people—and indirectly—by developing economic enterprises that destroyed and vastly altered ecological systems and made it impossible or increasingly difficult for Indians to continue their traditional livelihoods (p. 63).

This history, too, is sadly replayed over and over in colonized lands the world over, and the story of cultural and environmental loss that Anderson recounts in this chapter is just one of countless examples.

The First Peoples of what is now "New

World" British Columbia experienced comparable devastation and loss of their homelands, languages, and cultures at the hands of the newcomers and the accompanying colonial forces from the "Old World" (see Harris 1997; Turner 2005). Drained lakes, dyked estuaries, clearcut forests, polluted rivers, overgrazed hillsides, and introduced species of plants and animals that have replaced many indigenous species wholesale have all taken their toll on indigenous peoples' lives, cultures, and traditional practices. There are even similar histories of creating "protected areas" like Yosemite National Park in California in the United States that excluded the indigenous occupants of these areas. And, at times, they were prevented even from picking berries or acorns as they had for generations because of the tyranny of a "wilderness" mindset that insists on the banning of human occupation from "wild" ecosystems. What was not recognized in British Columbia or in California was the extent to which the indigenous peoples themselves were shaping their landscapes. Eliminating their influence alone has changed the forests, meadows, savannahs, and wetlands from their so-called "natural" state.

To live with less impact on the Earth, it may be that the loss of indigenous cultural knowledge is the single most devastating impact for all of us in terms of the opportunities we have lost to view the world differently. Western ideas and policies practiced by Western settlers have brought about the lost. Indigenous peoples in California and elsewhere—even with their complex practices, attitudes, belief systems, stories, songs, and vocabularies—by no means have had all the answers for sustaining human life over long periods of time. But they had—and still have in some measure—different approaches, different worldviews, and different values that might help us all collectively to find a better and less destructive relationship with our environment.

Once researchers are able to glimpse beyond the confines of their more orthodox training in any of a number of fields, from archaeology to conservation, and seek out teaching from those who have often been overlooked, it is remarkable what new insights we may gain. For example, an entire "new" system of clam management and production was documented by marine geologist John Harper, after he had observed unique "rock walls" along the lowest tide-line of certain beaches of the Broughton Archipelago along northeastern Vancouver Island. By eventually consulting with Kwakwaka'wakw hereditary chief, elder, and traditional-knowledge holder Adam Dick (Kwaxsistala), he learned that these features were clam gardens, which had been built and maintained for around two thousand years as a means of intensifying clam production by Adam Dick's ancestors. Celebrated in story and song, and known to Adam since his early childhood when he had helped to repair his own family's clam bed, these gardens had been all but forgotten, and had been assumed by archaeologists to be some type of natural feature (Woods and Woods 2005). Sometimes it is a matter of breaking away from our earlier cultural biases, to force us to the realization that books, journals, and writings from the Western world are only one source of knowledge. Western science and its experimental methods are not the only way we have to better understand ourselves and our environment.

In his book, *Tsawalk: A Nuu-chah-nulth Worldview*, Richard Atleo (2004), hereditary Nuu-Chah-Nulth Chief Umeek, provides us with a completely different, very holistic perspective and way of interpreting the environment, drawn from countless generations of living within and adapting to the turbulent social and ecological environment of Vancouver Island's west coast. This book demonstrates how understandings and practices are both reflected in and inspired by spiritual teachings, narratives and ceremonies. Ancient stories and ceremonies may well be rejected out of hand by ecologists and land managers, yet they may be far more effective in communicating complex concepts and key principles, promoting effective learning and understanding, and motivating people to participate in implementing more sustainable strategies for long-term resource use. This is a facet of the cultural components of conservation that Kat Anderson understands very well.

In all, this is an affirming book. It is a positive work that recognizes often unappreciated or completely overlooked sophisticated systems of knowledge. And it points the way toward the restoration of cultural practices that have worked with natural succession and regeneration pro-

cesses to enhance the productivity and diversity of the land and all of its diverse habitats and life-forms.

Notes

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Tending the Wild: Native American Knowledge and the Management of California's Natural Resources[1]

By M. Kat Anderson[2]

Reviewed by David E. Ruppert[3]

On the evening of July 4, 1804, members of the Lewis and Clark expedition, the Corps of Discovery, camped along the banks of the Missouri River near the present-day boundary between Atchison and Doniphan counties, Kansas. To celebrate this notable day, Captains Meriwether Lewis (1774-1809) and William Clark (1770-1838) and their crew donned military dress. After firing a keelboat cannon, all members of the party had an extra dram of rum. William Clark's notes reflect his admiration for this area along the Missouri River.

> The contry [country] was covered with sweet and nourishing grass [Big Bluestem: *Andropogon gerardi*; Vitman?], interspersed with copses of tress Spreading ther [their] lofty branchs over Pool Springs or Brooks of fine water. Groups of Shrubs covered with the most delicious froot [fruit] is to be seen in every direction, and nature appears to have exerted herself to butify [beautify] the Senery [scenery] by the variety of flours Delecately [delicately] and highly flavered [flavored] raised above the Grass, which Strikes and profumes [perfumes] the Sensation, and amuses the mind. (Quoted in Ambrose 1996:149)

Was the "sweet and nourishing grass" Big Bluestem: *Andropogon gerardi*; Vitman? (Moulton 2006). Clark's last entry for that day reads:

> So magnificent a Senery [scenery] in a Contry [country] thus Situated far removed from the Sivilised [civilized] world to be enjoyed by nothing but the Buffalo Elk Deer & Bear in which it abounds & Savage Indians. (Quoted in Ambrose 1996:149).

The campsite Lewis and Clark chose that evening was near or atop an extensive, but abandoned, Indian village, likely Oneota. Clark and others were clearly impressed by the bounty and beauty of nature they found there. "Nature appears to have exerted herself," as Clark said (Moulton 2006) and was bountiful. An European American cultural theme may be apparent here. The theme is that the so-called *natural world,* which was thought to be outside the influence of the works of Western civilization, presented itself as *pristine* or unspoiled in its original state. That idea was certainly dominate in Clark's time and seems to be implied in this passage. No mention is made of possible American Indian exertions that may have contributed to the character defining and plentiful conditions reflected in the "Groups of Shrubs covered with the most delicious froot [fruit]" that Clark observes. While this short journal entry does not make it possible to determine if human hands were at work along with nature's in this instance, it is unlikely that Clark would have entertained (nor would most of his contemporaries) the possibility of such cooperative work. Increased understanding of American Indian plant use, going back at least to the early 19th century (see Gilmore 1991), should suggest to any reader of the expedition records that nature's bounty in this case may well have been the result of long-term Indian gathering and gardening practices and other land-managing efforts to make these resources more easily accessible, and not simply the result of nature's ways.

The assumption of nature's *pristine* character has deep roots in Western religions and cultures and strongly informs popular worldviews to this day. As expressed in concepts like *wilderness* it also has been highly influential in crafting laws and land management policies in the western United States. Huge areas of federal land in the past half century have been set aside in the western states and managed as wilderness areas—areas "untrammeled by man" in accordance with the Wilderness Act of 1964 (Public Law 88-577) and left to the unfettered forces of *nature*. But, is the preservation of pristine wilderness a valid concept in places once inhabited by American Indians and now set aside and protected from human occupancy and use other than back

country trekking? Were the varied landscapes in North America encountered by the first European American settlers the result of natural or human forces, or both? What does *wilderness* mean in the context of prior or ongoing Indian manipulation of the landscape? And, if Indian subsistence activities did change the face of the continent, what is actually being *preserved* through law and policy when areas are protected from human use or intrusion? These are significant research questions for historians, ecologists, geographers, anthropologists, among others. And beyond academic research, the answers are directly relevant to the management practices and preservation policies of public lands.

Kat Anderson's book, *Tending the Wild: Native American Knowledge and the Management of California's Natural Resources*, seeks to address these questions, and more. The book is the result of a lifetime of research focusing on California Indian peoples' subsistence practices. Anderson compiles here in one place, a comprehensive survey of the California the first European American visitors and settlers encountered and details descriptions of Indian subsistence practices. The major focus of the book is the role these practices played in shaping local and regional landscapes and the technical indigenous knowledge in accomplishing these ends. The first part of the book focuses on early accounts of the region's natural bounty along with a straightforward description of California's plant and animal life and its marine resources. The reader cannot help but be impressed with the state's geographic and biological diversity, a diversity that forms a backdrop for a discussion of California Indian reliance on and management of this diversity. Although her focus throughout the book is the influence of Indian practices on the landscape, she wisely discusses the importance of natural disturbances, such as natural fires and flooding, in shaping the natural landscape and plant ecology. Many plant species have become fire dependent or evolved to take advantage of other natural soil disruptions. It is on the base of natural ecological relationships that the discussion of the influence of Native American cultural practices on the landscape begins and continues throughout the book.

Traditional methods of plant harvesting, reseeding, and replanting are all discussed here to shed light on Indian efforts to shape local environments to better meet subsistence needs. Plant harvesting and food processing are described with an eye to how these practices impacted local environments. Anderson deftly changes the scale of discussion from *local* to *landscape* in descriptions of Indian uses of fire to increase or enhance browse for wildlife, to create meadows, control pests, to increase the production forbs, sedges and grasses, as well increase the availability of wild fruits.

Fire, of course, has been long recognized as one of the most important tools used by American Indians across the continent to modify large areas (Blackburn and Anderson 1993; Boyd 1999; Lewis 1993; Sauer 1967; Stewart 2002). Anderson emphasizes the importance of fire but wisely leaves the reader to rely on the extensive literature on the Indian use of fire already in print (see Blackburn and Anderson 1993). The significant contribution of this book focuses on other, more intimate traditional plant and landscape modification techniques resulting from a variety of cultural practices targeting plant procurement and processing. Such techniques that have been the focus of much of her research work over the past 25 years. These details, placed in the context of ethnohistoric documentation, contemporary ethnographic interviews, and on-the-ground experimental work, form the backbone of her important contributions to our knowledge in the field of Indian ecology. With detailed descriptions of basket-making by California Indian peoples, Anderson provides a most detailed description and analysis of Indian cultural practices and its effect on plant distribution, morphology, and abundance. She relates how these changes affect significant modifications in the character of the local environment (also see Anderson 1991a and 1991b).

Not satisfied, as some anthropologists might be, to focus only on cultural practices, she drills down into the details of plant reproductive biology and the morphological affects on the plant of coppicing, pruning, and whole-scale harvesting. Indeed, these details, placed in the context of historic observation, plant biology, and ethnography makes Anderson's book not a "should read" but a "must read" for any serious

student of ecology and human behavior.

Tending the Wild challenges a few cherished anthropological categories such as just who might be hunters, gatherers, and agriculturalists. Although the literature has recently started to blur the lines between these categories of human economy, Anderson practically erases the lines by providing a wealth of detailed data describing native California's subsistence technology. Notions that the old categories reflect increasing levels of knowledge and social complexity persist in the profession but are seriously challenged by this book. California's Indian peoples would have typically fallen into the hunter/gatherer categories and consequently fallen, in the minds of professional researchers, lower on an evolutional scale of social complexity. Anderson questions the research value of these categories of human economy by describing the complexity of native Californian technical knowledge necessary to shape and manipulate the resource environment to achieve desired ends. She also dismisses romantic notions that native Californian's were natural ecologists, often portrayed by environmental writers as people living in complete balance with nature. This book points to the fact that Californian Indian people often found a balance with their natural environment through their extensive technical knowledge. But she also makes it clear that, as others have pointed out, Indian peoples had their thumbs on the scale by applying hard earned technical knowledge about the environment and how this knowledge can be applied to ensure a sustainable or enhanced source of resources (Mann 2005).

Indigenous land and resource management in California is the primary theme that unites every part of *Tending the Wild*, of which there are two more beyond the first. But the importance of understanding the methods and techniques of indigenous management of natural resources reaches beyond its significance to the fields of ethnobotany, human ecology, or human geography. It has direct application to policies and practices of federal and state land and resource management agencies charged with the protection, preservation or beneficial use of public resources. Each agency has its own mission and a separate set of policies regarding resource use and management, but all agencies benefit from, and should be informed by, research that sheds light on past human use of the vast areas under their control. Wise use of resources, for whatever purpose, should be the foundation for all government land management decisions. Of course, American Indian peoples, in using local or regional natural resources for their own use in the past faced many of the same management problems, especially regarding issues related to sustainability. Anderson makes a good case that in many instances the requirements for sustainability were met by the traditional subsistence practices of California Indians. She also makes a good case that an understanding of how theses requirements were met can greatly inform present land management practices. One obvious example is reflected in changes management agencies have made in fighting wildland fires. The past three decades has seen a dramatic shift from a government policy of fighting all forest fires to one that increasingly uses prescribed fire to manage resources as well as entire landscapes: A management technique that reflects centuries if not millennia of Indian uses of fire.

Anderson's work also tackles issues related to landscape restoration. For agencies like the National Park Service, large areas of the west were set aside to preserve entire regions or landscapes. However, as parks were established, Indian people were removed under the assumption that a hands-off policy was the best preservation policy. Their departure also ended, or at least discouraged, traditional Indian management practices that is so well documented by the book under review. In the absence of such practices, the landscape often changed as it responded to the implementation of this policy of "no human intrusion." In some cases, this desire to preserve the *natural* character of an area became instead an experiment in the application of *pristine* management policy. In the absence of indigenous management techniques, these landscapes changed. Over decades these changes have led some to question what actually is being preserved. If parks were intended to be preserved in a condition that existed at the time of their establishment, then parks have, in some instances, become candidates for serious restoration projects; restoration to a condition that had resulted from indigenous management.

Anderson addresses the division of opinion within restoration efforts to return a landscape to a "natural" state or to one that has for centuries been affected by Indian practices. She points out, importantly, that if the goal is restoration to a condition equivalent to that of indigenous use, it is necessary to understand the traditional ecological knowledge of Indian peoples before such restoration begins. The application of this traditional knowledge requires (1) efforts to document this knowledge and (2) careful thought as to its practical application to achieve restoration goals on public lands through significant changes in management policies. Of course, restoration of indigenous landscapes is not simply an exercise in preserving the condition of natural resources; it is also a vital element in the preservation of living indigenous cultures. If federal agencies charged with preservation of the nation's heritage resources become serious about such restoration efforts, they need to combine their interest in preserving archeological sites and rehabilitating Indian ruins with a serious rethinking of how to aid indigenous Americans to preserve their own living cultures, if they desire such preservation.

If restoration projects are designed and carried out, they need to be carried out in partnership with Indian tribes. Such partnerships would lead to a greater understanding of Indian traditional knowledge and to more effective application of this knowledge in projects designed to achieve mutually desirable goals. Anderson's work is highly significant in this regard. She not only provides the careful scholarship in documenting and analyzing traditional environmental knowledge, but she also focuses on land management policy implications of the application of this knowledge. For this reason alone, this book should become standard reading for natural and cultural resource managers and policy makers at the federal and state levels.

Critics of Kat Anderson

Anderson's work is not without its critics. Thomas Vale (1998, 2002) and others like Margot Kaye and Thomas Swetnam (1999) contend that she paints with too broad a brush when making claims regarding Indian manipulation of whole landscapes. These writers claim that proponents of so-called humanized landscapes, like Anderson, have gone too far by stating that, over time, every acre of the continent has been somehow modified or affected by Indian cultural practices. The critics call for a more careful consideration of such statements and a further consideration of the extent that pristine wilderness, especially in the west, existed at the time of European American entry into North America. They call for more detailed research and documentation to validate the broadest of the claims of humanized landscapes. They claim that at until more research is done, it is more reasonable to state that Indian subsistence affected smaller, more constricted areas directly related to village or seasonal camp sites. Vale and his colleagues contend that while it is reasonable to state that Indian tribes changed specific locales, it should be recognized that some areas were not affected and that the so-called pristine forces of nature were more often dominate factors defining large portions of western regions.

To a large extent, these criticisms rely on a manufactured dichotomy. *Pristine* is an idealized environment where no humans have had an impact. *Humanized* landscapes are seen as human designed areas that are an interference with, or disruption of *nature's* handiwork. This maintains the old notion, both popular and professional and based in Western religion, that humans are somehow separate from the environment, not part of it. In this view, humans are seen as despoilers of the natural realm, which is an underlying assumption buried deep in the Western *wilderness* concept. The argument generated from this dichotomy, from this reviewer's perspective, is not very productive. Rather, the primary focus should be on a careful examination of those cultural mechanisms employed by people in the course of resource use and management. Understanding the extent of the impacts of these mechanisms is important for a number of reasons, but the discussion surrounding the extent of impacts on the physical environment should not overshadow the importance of understanding the details of cultural knowledge and behavior. Anderson clearly supports the view that the human shaping of the environment is more pervasive than that supported by critics like Vale. However, in her book she tacitly rejects

the polarizing positions of *human* versus *natural* and takes the straightforward view that there are places in California that likely had little or no intervention from indigenous peoples (p. 3). Thus, immediately setting aside the arguments for one extreme view or another, Anderson turns her attention to the importance of understanding indigenous traditional knowledge regarding management of culturally important resources, which is the real focus of this book and of her work for the past two decades. While Vale and others harp on statements and claims regarding external, physical, and environmental changes, as the geographers they are for the most part, they miss the real value of Anderson's work. Her real focus is on human knowledge, the internal landscape of Native Californians, and the intimate, personal relationships these people have with their traditional lands and resources. Her focus is not solely on the result behavioral practices have had on the shape and character of the external geography.

Even less productive are statements by Vale that Anderson's work is an attempt to push a specific political agenda; in his words a "social ideology" (1998: 235) that tries to validate Indian history and identity, as well as her own views on indigenous landscapes. This criticism may stem from methodological differences. Anderson typically works closely with American Indian people. Through interviews, visiting traditional collection or gathering sites, and working in partnership with members of California Indian tribes in her experimental work (Anderson 1993), Anderson takes an anthropological perspective. That is, she attempts to understand the indigenous view of the resource. She describes the close personal connection to place, plant, and landscape. Attaining and describing this perspective is, perhaps, interpreted by Vale and others as a departure from an objective, scientific viewpoint. This would be a gross misunderstanding of method and results. Attaining the indigenous perspective is a vital element in understanding the relationship of human communities to their environment. Commonly shared beliefs, values, and world views at any given time are the engine of individual and group behavior, and certainly of behavior involved in the use of natural resources. Rather than pushing a specific "ideology," Anderson provides us with important insights into the other half of the research question, the one not often asked, or answered, in other professional efforts. Even critics of Anderson's work admit that much of her work is among that of those who "champion the image of a Sierra domesticated by aboriginal humans is reasoned, cautious, and scholarly" (Parker 2002:259).

Land and Resource Management Policy Implications

In recent years, government agencies charged with the management of millions of acres of federal and state land in the west have been challenged to manage these lands with a greater understanding of American Indian cultural perspectives. Indian traditional cultural values are land-based and they increasingly look to federal agencies to assist them in preserving these values through management of lands and resources more compatible with these values. Through changes in federal law and executive orders, agencies are directed to consult with tribes to determine if planned actions will negatively impact lands that have cultural significance to tribes. Anderson's *Tending the Wild* provides important guidance for agencies wishing to build better relationships with Indian tribes, and wishing to find ways to incorporate Indian concerns into resource management policy and action. Agencies, of course, have their own bureaucratic cultures. It is no surprise these cultures reflect institutional perspectives and attitudes that must be overcome or changed before the application of traditional Indian ecological knowledge is viewed as useful.

Typically, in federal and state agencies, natural and cultural resources are seen as separate and distinct. These respective programs are funded and staffed separately and respond to different laws and guidelines when formulating resource management policies. This separation of program functions has often been a barrier to projects that combine natural and cultural resource issues. Such interdisciplinary projects are increasingly needed in a world that requires a more holistic perspective of our environment. Ethnobotany, as practiced here by Kat Anderson offers an important means to achieve this holis

tic perspective and, in the process, change agency practices and the policies behind the practices. *Tending the Wild* is perhaps the best example of how agencies can go about designing and conducting interdisciplinary work to bring about the necessary change.

Notes

1. Berkeley: University of California Press, 2005. 557 pages, three parts, 12 chapters, bibliography, coda, drawings, index, introduction, maps, notes, photographs, preface including acknowledgments, tables. Cloth $39.95 U.S.

2. M. Kat Anderson's Ph.D. is from the University of California at Berkeley in wildland resource science. She is employed by the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture as its national ethnoecologist who reconstructs the plant uses, land-management practices, and harvesting strategies of indigenous peoples in the United States with an emphasis on California. Also at the University of California at Davis, she is an ecologist at its Agricultural Experiment Station, and a lecturer in the Department of Plant Sciences. She may be reached at the Department of Plant Sciences, University of California at Davis, Mail Stop 6, 1 Shields Avenue, Davis, California (CA) 95616-5270 USA. She may also be reached at 530-752-8439 by telephone and at **mkanderson@ucdavis.edu** by e-mail.

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Tending the Wild: Native American Knowledge and the Management of California's Natural Resources[1]

By M. Kat Anderson[2]

Reviews counterpointed by M. Kat Anderson

I appreciate the detailed and thoughtful reviews of the book. I am fortunate to be a part of the growing movement of researchers outlined in Nancy Turner's review who are addressing the nexus between nature and culture. We document how culture shapes and informs management practices on the land and quantify the potential ecological effects of those practices through controlled experiments. In *Tending the Wild,* I deal with cultures operating in what Bruce Smith calls "The Middle Ground" (Smith 2005:39). These are the California Indian groups that do not fit neatly into the "hunter-gatherer" category or "agriculturalist" category. These groups practice methods of food production that do not necessarily cause or lead to incipient or full domestication.

As Turner points out, these "middle ground" indigenous cultures are widespread—practicing management techniques in wildlands on multiple continents. Turner also states that the world is simultaneously losing the diversity of these indigenous cultures and the natural systems upon which their cultures are based. Thus, this is a pivotal time for applied anthropologists and ethnobiologists as the research we do documents (1) many of the harvesting strategies that allow for coexistence with nature, (2) the ancient management strategies conducted on wildlands, and (3) the former abundance and diversity of plant and animal species tied to this harvesting and management. This information gives us both a benchmark – a measure of what we have lost or are losing – and a guidepost for how to, in collaboration with tribes, restore and manage wildlands.

In his review, David Ruppert discusses and defends my work in the context of the views of some of my critics. It is my hope that this book will stimulate debate by challenging the long-held perception that the North American wilderness before European contact was pristine. That perception has overlooked the impacts, positive or negative, that the land-managing practices of its indigenous inhabitants would have had on the land's ecology. There are a growing number of researchers in the biological sciences in California who recognize that biologically diverse ecosystems such as coastal prairies, montane meadows, oak savannahs, and certain coastal redwoods are intricately tied to Native American interactions, especially Indian burning practices. Two new books edited by prominent fire and plant ecologists include Native American burning practices as a significant ecological force in California (Sugihara et al. 2006; Stromberg et al. in press). These books are important enough to be used as college classroom textbooks. New pyro-dendrochronology studies are showing that fire return intervals are short—too short to be attributed to lightning fires alone (Fry and Stephens 2006). For instance, there is a rethinking of the role of Indians in the maintenance of coastal redwoods in certain regions. Their fire management was much more substantial than previously thought (Stephens and Fry 2005).

Ruppert points out that past Indian knowledge and management practices have direct bearing on policies and practices of federal and state land and resource management agencies charged with the protection and conservation of public lands. And that we are hindered by the fact that funding, regulations and staffs, for the management of cultural and natural resources are on separate tracks. This is changing, at least in California where natural and cultural resource issues are being addressed jointly and innovatively. Two examples are the following:

1) U.S. Fish and Wildlife Service recovery plans that are being developed for threatened or endangered plant species are starting to set recommendations for the reintroduction of populations that encompass experiments that mimic Native American management techniques for rejuvenating these populations as one avenue of plant restoration (United States Fish and Wildlife Service 2006).

2) A new plant gathering policy has been finalized by the U.S. Forest Service and the U.S.

Bureau of Land Management for California. It specifies that the local managers of these agencies, in consultation with tribal governments and communities and indigenous traditional practitioners "will identify opportunities and tribal partnerships to incorporate tribal traditional management practices to restore, enhance and promote ecosystem health" (U.S. Department of Agriculture Forest Service and U.S. Department of the Interior Bureau of Land Management 2006). This policy will be incorporated in respective manuals. This landmark move recognizes the links between tribal management and ecosystem health in certain plant communities.

These are just two of many examples. They show how the work of applied anthropologists and ethnobiologists, in collaboration with tribes, can and is influencing the ways that natural resource managers and ecologists view, set research agendas for, and manage the natural world.

Notes

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